The function of gathering information can be split among several scanners, for example, an attribute scanner and a topology scanner. An attribute scanner can execute queries received from an attribute discover processor 40a of the discover engine 40. This can include issuing Name Server Queries, walking loops and issuing upper level protocol queries. This can result in gathering host and device attributes as well as rudimentary topology information, e.g., connectivity group level information. The attribute scanner also gathers file system level information used by Storage Automation agents. The topology scanner executes queries received from a Topology Scanner Processor 40b. This includes issuing Management Server/Name Server queries and RNID queries.

The discover engine 40 has preferably a separate process for each type of scanner. For example, the attribute scanner information is processed by the attribute processor 40a that understands the format of information received from the attribute scanner. Each discover engine is responsible for presenting an image to the SAN Manager of the objects within its scope. Thus, the discover engine 40 receives events and performs rediscovery and/or gathers attributes to update a SAN image. Since the discover engines are distributed, or at least have the capability to be distributed, they need not automatically extend their scopes. If a discover engine detects additional information beyond its scope, it will report it to the SAN Manager process which determines whether the discover engine should expand its scope or the new data should be covered by another discover engine.

The SAN Manager 20 can also include a query engine 46 that is a helper service which manages inband and outband scan requests. A client, such as the discover engine 40, registers scan requests with the Query Engine 46 which specifies target, scanner name and period of execution information. The query engine 46 coordinates running of the scanners and returning information to the client. A portion of the query engine 46 includes outband scanners which perform Simple Topology and Topology scans.

A Simple Topology scanner gathers interconnect element information by utilizing FE MIB queries. This provides rudimentary switch information that can be combined with inband attribute scanner information to identify which switches constitute the individual SANs. An outband Topology scanner provides the same information as the inband Topology scanner, with the exception of zone information, using the FC MGMT MIB and FE MIB. This scanner provides connection level information.

With continuing reference to FIGURE 6, an Event Correlator 48 is responsible for ensuring that Event SubAgents are running, creating rich SAN management events from the raw event information provided by the Event SubAgents or in SNMP traps and delivery of the SAN management event to interested services via an event service 50. The information received from the Event Subagent or provided in the SNMP trap may be self-contained. However, in most cases, it will require processing to provide a richer SAN management event that can be used by various services. As an example, an SNMP trap from an IP address will need to be mapped to an object in the SAN Manager's composite image and parsed based on the MIB associated with that

object type (e.g., once it has been determined that a trap came from a Brocade switch, the Brocade switch MIB is utilized to determine the meaning of the trap).

SAN Manager Console

The exemplary manager 20 can also include a console, herein referred to as SAN manager console 52, herein referred to as Netview console 52. A Netview server 54, a Netview Daemon 56, a SAN manager Daemon 58, a Netview Requester 60, and a Console Request handler 62 allow the Netview console 52 to interact with the SAN manager service 38.

The NetView server 54 and console 52 provide a topology console for SAN Manager. The primary interface for SAN Manager into the NetView Server uses interfaces provided by a gtmd daemon. The server maintains a persistent store of the information that can be displayed by the NetView console X and/or NetView Java Client 64.

Another interface between the SAN Management applications and the NetView server/console is the SNMP Trap interface. The Event Service can be configured to send SNMP Traps to the NetView Server 54 which will be displayed on the NetView console 52.

The SAN Manager/NetView daemons 56/58 provide a bridge between SAN Manager services and NetView. The SAN Manager daemon 58 can communicate with the SAN Manager service 38 by utilizing, for example, a Voyager ORB interface. The NetView daemon 56 can communicate with NetView server 54 by utilizing, the gtmd interfaces, NVOT, OVW and